

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

MAILED

JUL 21 2005

U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICARDO COZAR
and
MARIE-PAUL SOLIGNAC

Appeal No. 2005-1354
Application No. 09/940,481

ON BRIEF

Before KIMLIN, PAK and TIMM, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-18.

Claims 1 and 9 are illustrative:

1. An Fe-Ni-Co alloy whose chemical composition comprises, by weight based on total weight:

32% \leq Ni \leq 34%
3.5% \leq Co \leq 6.5%
0% \leq Mn \leq 0.1%
0% \leq Si \leq 0.1%
0% \leq Cr \leq 0.1%
0.005% \leq C \leq 0.02%
S \leq 0.001%
0.0001% \leq Ca \leq 0.002%
0.0001% \leq Mg \leq 0.002%

and further comprising iron and impurities resulting from smelting; the chemical composition of the alloy furthermore satisfying the relationships:

$$\begin{aligned} \text{Co} + \text{Ni} &\leq 38.5\% \\ \text{Co} + 0.5 \times \text{Ni} &\geq 20\% \\ \text{Co} + 5 \times \text{Ni} &\geq 165.5\% \end{aligned}$$

and

$$S \leq 0.02 \times \text{Mn} + 0.08 \times \text{Ca} + 0.6 \times \text{Mg}$$

wherein said alloy has a martensitic transformation start point of less than -50°C , an average coefficient of thermal expansion between 20° and 100°C of less than or equal to $0.7 \times 10^{-6}/^{\circ}\text{K}$ and a mean coefficient of thermal expansion between 80° and 130°C of less than or equal to $1 \times 10^{-6}/^{\circ}\text{K}$.

9. An Fe-Ni-Co alloy consisting essentially of iron and:

$$\begin{aligned} 32\% \leq \text{Ni} &\leq 34\% \\ 3.5\% \leq \text{Co} &\leq 6.5\% \\ 0\% \leq \text{Mn} &\leq 0.1\% \\ 0\% \leq \text{Si} &\leq 0.1\% \\ 0\% \leq \text{Cr} &\leq 0.1\% \\ 0.005\% \leq \text{C} &\leq 0.02\% \\ S \leq 0.001\% & \\ 0.0001\% \leq \text{Ca} &\leq 0.002\% \\ 0.0001\% \leq \text{Mg} &\leq 0.002\% \end{aligned}$$

the chemical composition of the alloy furthermore satisfying the relationships:

$$\begin{aligned} \text{Co} + \text{Ni} &\leq 38.5\% \\ \text{Co} + 0.5 \times \text{Ni} &\geq 20\% \\ \text{Co} + 5 \times \text{Ni} &\geq 165.5\% \end{aligned}$$

wherein % is % by weight, and

$$S \leq 0.02 \times \text{Mn} + 0.08 \times \text{Ca} + 0.6 \times \text{Mg}$$

wherein said alloy has a martensitic transformation start point of less than -186°C and an average coefficient of thermal expansion between 20° and 100°C of from $0.7 \times 10^{-6}/\text{K}$ to $0.49 \times 10^{-6}/\text{K}$.

The examiner relies upon the following references as evidence of obviousness:

Ishikawa et al. (Ishikawa)	4,832,908	May 23, 1989
Kato et al. (Kato)	5,164,021	Nov. 17, 1992
Inoue et al. (Inoue)	5,234,512	Aug. 10, 1993
Fukuda et al. (Fukuda)	5,236,522	Aug. 17, 1993

Appellants' claimed invention is directed to an alloy of iron, nickel and cobalt that is used to form shadow masks. According to appellants, they "have discovered that local doming which may occur in shadow masks exposed to thermal stress can be reduced if the alloy from which the shadow mask is made adheres to the compositional and/or physical property requirements of the claimed invention" (page 4 of principal brief, third paragraph).

This application is a continuation of U.S. Application No. 08/641,233 filed on April 30, 1996, now abandoned. The parent case was before this Board and, in a decision dated June 29, 2001, the Board affirmed the examiner's rejection under 35 U.S.C. § 103 over the same claims 1-8 presently before us over the same prior art references.

Appealed claims 1-18 stand rejected under 35 U.S.C. § 112, first paragraph, enablement requirement. Claims 1-18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Inoue in view of Fukuda, Ishikawa and Kato. Claims 1-8 are also rejected under res judicata based on the prior Board decision.

The various groups of claims set forth by appellants stand or fall together (see paragraph bridging pages 5 and 6 of principal brief).

We have thoroughly reviewed the respective positions of appellants and the examiner. In so doing, we find that the examiner's § 112, first paragraph, rejection is not well-founded. However, we are in complete agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the examiner's § 103 rejection.

We consider first the examiner's rejection under § 112, first paragraph. It is the examiner's position that "[t]here is no teaching to obtain the martensitic transformation start points less than -186 and/or thermal coefficients of expansion $0.49x^{-6}$ to $0.7x^{-6}$ " (page 4 of Answer, third paragraph). According to the examiner, "[i]t is unclear why the examples (A to D) in pages 6-7 of the instant specification have different martensitic transformation start points and thermal coefficients of expansion since compositions of all examples are in the claimed ranges and also complied with the claimed equations" (id.).

The claims on appeal encompass a large variety of compositions. As such, the examiner has not explained why various alloys within the scope of the appealed claims would not be expected to have different martensitic transformation start points and thermal coefficients of expansion. As pointed out by appellants, Examples A-D of the specification exemplify different compositional alloys having martensitic transformation start points of -90°C and -186°C and different thermal coefficients of expansion. The examiner has not carried the initial burden of establishing that one of ordinary skill in the art would not be able to make the alloys exemplified in the specification and embraced by the appealed claims.

We now turn to the § 103 rejection of the appealed claims. For the reasons set forth in the prior Board decision, we find that the collective teachings of Inoue, Fukuda, Ishikawa and Kato would have rendered the claimed invention obvious to one of ordinary skill in the art. Although appellants assert that a new argument is made in the present appeal for claims 1-8 that were not presented in the prior appeal, the examiner has properly determined that res judicata applies. The examiner's rejection of instant claims 1-8 under 35 U.S.C. § 103 was sustained by the

Board in the prior appeal, and appellants have not presented new evidence with the current appeal.

As explained in the prior decision, Inoue, like appellants, discloses an iron alloy for forming a shadow mask comprising nickel, silicon, carbon and sulfur in the presently claimed amounts. While the alloy of Inoue does not comprise cobalt, we are convinced that Fukuda, Kato and Ishikawa establish the obviousness of incorporating cobalt into the iron alloy of Inoue. For instance, Fukuda, as noted by the examiner, teaches an iron/nickel alloy for making a shadow mask and expressly teaches that the presence of cobalt "well upgrades its etching adaptability" (column 2, lines 53-54). Also, Kato specifically discloses that "[p]resence of Co in the alloy composition assures easy pore formation via etching" (column 2, lines 46-47), and Ishikawa teaches that "Co has an effect to broaden the range of low expansion coefficient" (column 3, lines 24-25). Accordingly, we find that the prior art provides ample motivation for adding cobalt to the iron alloy of Inoue.

Appellants submit that Fukuda "states that alloys containing less than 0.1% Mn are not desirable and would not provide the physical characteristics desired of the alloy or articles derived from the alloy [whereas] [i]n the presently claimed invention the

Mn content is limited to $\leq 0.1\%$ (page 7 of principal brief, second paragraph). First, however, we must point out that the 0.1% Mn taught by Fukuda falls within the claimed range. Furthermore, Fukuda does not teach, as asserted by appellants, that less than 0.1% Mn would not provide the desired physical characteristics. Rather, Fukuda discloses "[a]ny content below 0.1% would assure no appreciable improvement in forging adaptability" (column 2, lines 60-62). Hence, Fukuda does not teach away from using less than 0.1% Mn but only teaches that no further improvement in forging adaptability would result in such concentrations.

As for the appealed claims, such as claim 9, which result recite a martensitic transformation start point of less than -186°C and a different range for the average coefficient of thermal expansion between 20° and 100°C , appellants have not rebutted the examiner's reasonable rationale that the obvious inclusion of cobalt in the recited amounts would necessarily result in the claimed martensitic transformation start point and average coefficient of thermal expansion. Appellants have proffered no objective evidence that the cobalt-modified iron alloy of Inoue, or the alloys fairly taught by Fukuda, would not exhibit the claimed properties. Nor have appellants established

that one of ordinary skill in the art would have considered the claimed properties truly unexpected for iron alloys within the scope of the rather broad claims on appeal. We note that appellants own disclosure establishes that alloys within the scope of the appealed claims can have a martensitic transformation start point ranging from -50°C to at least -186°C.

Also, inasmuch as appellants' specification, at page 5, discloses that the carbon content should be at least 0.005% in order to achieve the claimed martensitic transformation start point, it would seem that Samples 1-4 of Fukuda's EXAMPLE 1 would possess the claimed properties for the alloy. Again, there is no evidence of record to the contrary. We further note that Samples 4-7 of Fukuda meet the claimed relationships for cobalt and nickel.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective Sep. 13, 2004; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat. Office 21 (Sep. 7, 2004)).

AFFIRMED

Edward C. Kimlin
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